



Ø BEAT



COLO. SPRINGS,
COLORADO

JUNE 1980

R.I.P. OSCAR 9

The hopes and dreams of thousands of hams around the world were set back the morning of May 23 when the launch vehicle for the Phase III, Oscar 9 Amateur Radio Communications Satellite failed one minute after lift-off. The result is a watery grave for the \$300,000.00 space craft. The disastrous launch was heard worldwide on several ham bands through the Amateur Satellite Launch Network. Lift-off occurred at 14:29 UTC from the European Space Agency launch facilities in French Guyana, South America. At 14:30 UTC one engine lost power on the French Ariane rocket and a minute later it was all over. Five years of construction and over forty man-years were represented in the birth of Oscar 9. So, it's back to square one for the AMSAT group. We shall return.

Ed
WØVO AMSAT #LM-1051

SCOPES — A Very Useful Instrument

OSCILLOSCOPES

I once saw an article entitled "Do We Deserve the Oscilloscope". The article described the oscilloscope as an instrument available long before its time. Well, before its time or not, the oscilloscope is truly a remarkable instrument not fully appreciated or utilized by hams.

Basically the oscilloscope drives a light beam horizontally across the surface of a CRT (cathode ray tube or picture tube) at a constant rate. This rate ranges between less than one-millionth of a second to several seconds for a full screen sweep.

Lets think for a minute about voltages in circuits, voltages that vary such as audio and RF, pulses, noise, ripple, etc. Voltmeters only measure the peak, average or RMS values of these varying voltages. What is really needed is a means of viewing these varying voltages and a method of representing them versus time. The time will give an indication of the repetition rate and can even give a good idea of the frequencies involved in the various parts of the wave. The other parameter desired is amplitude with some sort of calibration.

The oscilloscope comes to the rescue. As the beam is moving horizontally across the CRT, the signal we wish to view is allowed to deflect the beam vertically giving a picture in real time of the varying voltage versus time. An additional circuit called a trigger or sync circuit synchronizes the horizontal movement of the beam with some point on the input wave, the result being a stable (standing still) picture.

As with receivers and transmitters, the lower cost units provide limited performance compared with the more expensive commercial units. But like receivers and transmitters, low cost oscilloscopes can be adapted for uses around the ham shack that were not originally intended by its designers. Over the next few months I will try to present several uses for oscilloscopes around the shack. I would appreciate hearing from others in the club on uses of oscilloscopes in the ham station and especially getting a write-up on them. How about you RTTY and satellite guys?

Oscilloscopes, like anything else have specifications of particular interest to the user. For hams, the most important spec is: does it get green on the screen? Vertical bandwidth is an important specification when using a scope for troubleshooting. Bandwidth determines the useful frequency

Scopes continued on page 5

P.P.R.A.A. DIRECTORS

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(* Two-year board terms began November 1979)

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The Pikes Peak Radio Amateur Association meets on the second Wednesday of every month at Sabin Jr. High School, 3605 N. Carefree Circle at 7:30 p.m. and all amateurs and interested persons are cordially invited.

Editor: Jim Colvin NØAVY, 4610 Topaz, Colorado Springs, Colorado, 80918 598-7704

MAY MEETING MINUTES

The May meeting of the Pikes Peak Radio Amateur Assoc. was called to order at 7:32 P.M., May 14 by President Don Lohse KBØKQ. All present introduced themselves. Treasurer David Riese WBØSDW reported \$1,046.71 in the treasury. Mike Stansberry KØTER gave information for Hams participating in communications for the Colorado Springs "Walk for Mankind". Ed Means WØVO gave information for the May 23rd launch of Oscar 9 from French Guyana. On the 23rd there will be Amsat nets on 28.880, 21,280, and 14,280. Ed also passed around a get well card for Bart WAØYOH, now living in North Carolina, for everyone to sign.

Don, KBØKQ reported the club will take out a membership in the Amsat organization, plus an added \$10.00 donation. Don also asked that Oak KØROL extend a thank you from the club to Wayne Greene for the article in '73 Magazine on the clubs participation in the National Sports Festival.

Al Bailey ADØZ announced that the communications for the "Outhouse Race" held in the Black Forest went very well, with 10,000 people attending the event.

Don reported for Bud WBØTIB that Coe WØFPT has donated a KDK for permanent use at the WX service station at Pete Field. \$75.00 has been collected so far more donations would be appreciated to reimburse Coe for the radio. Contact Bud, or Chuck WØRNT.

Also from Don KBØKQ — Please get us articles in for Ø Beat; the 52 Net has been dropped temporarily due to lack of checkins. Refreshments for June will be taken care of by John KAØGDD — please contribute to the coffee kitty.

"Hammy" the Ham of the Month Award was presented to Dave WØMBZ and Ken KAØDST for their engineering of a very successful Swap Fest.

Don KBØKQ announced that Jim KBØKP from Monument will be leaving for Green Valley, Arizona. Jim will be sorely missed.

Dave WBØSDW expressed appreciation for the many donations to the club during the Auction at the Swap Fest.

At 8:07 P.M., Ray Heaton WAØDYZ, Customer Relations Chief for Ehrhorn Technological Operations in Canon City, CO began an excellent program on HF Power Amplifiers, Home Brew and Commercial.

Dave NØDV reminded everyone about Field Day June 28-29 on the Rampart Range Rd. There will be a Field Day Committee Meeting on May 23, 7:30 P.M. at 2511 N. Tejon.

Respectfully Submitted,
Lorna, WDØBTF

PPFMA

Last month I commented that it appeared as though our spring snow storm had bypassed us. I'm a little embarrassed that it had not and that some of the following activities were the direct result of the rather severe snow storm which "materialized" shortly after that writing. Maybe early next spring, someone will remind me to desist from making weather predictions!

4-22-80: WBØZZV's cabin in Park County was broken into earlier. Tom reported it to the Park County Sheriff's Office through 37/97 and KØYUQ, Jim's phone patch. WBØNXY, Jack, who is a Park County Deputy Sheriff responded to the report, meeting Tom on 146.52 for talk in to the cabin site.

4-23-80: WØRCJ, Lew reported an accident on Highway 9 north of Hartsel to the State Highway Patrol through 37/97 and KØYXC, Keith.

4-24-80: KØYXC, Keith reported a snowplow off the road near Florissant using 37/97.

4-24-80: WBØJUW reported an accident on Academy Boulevard to the Colorado Springs police through 37/97 and KAØGDD.

4-24-80: WBØWDF, Dennis; WØPTJ, Hank; NØKV, Barry; WBØKKI, Mike and others provided assistance to campers stranded by the snow storm at Skagway reservoir using 37/97 for communications.

5-9-80: WAØAEH, Art; WAØQQT, Tom; WØMBZ, Dave; WØRNT, Chuck; NØBZ, Tom; KB5KD, Don; WBØKKI, Mike;

PPFMA Continued on Page 3

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PPFMA Continued from Page 2

W0PCZ, Louie; W0HZG, Jerry; and many others using 16/76 assisted in the extensive search for a drowning victim along flood swollen Fountain Creek.

5-11-80: The Woodland Park Hams conducted a flood watch along the Platte River reporting via 37/97.

5-12-80: N0AMP reported a 2 car accident to the Highway Patrol via 37/97 and W0CQX.

5-17-80: An SCCA sanctioned sports car rally was held in the Woodland Park, Deckers, Florissant area. Communications was provided using 37/97, 34/94, and 52 by WA4FMA, Jim (NCS); W0UW, Kim (NCS); W0HEF, Wayne; WA9OH5, Jay; W0DMT, Bill; K0CI, Steve; K0DJ, Bob; and W0PNX, Dick. The rally ran very smooth and efficiently with 37/97 being used only to maintain long range contact between the various areas and control stations. 37/97 was the only communications link in use which could be accessed by all station locations and could have been invaluable had the necessity arisen.

N0KV, Barry; W0QQT, Tom and others responded to a request to a request and successfully recovered a hiking party stranded in deep snow on Rampart Range Road. The 37/97 repeater was used for communications.

5-19-80: N0KV, Barry; W0QQT, Tom; W0KKI, Mike and others responded to a request to locate overdue 4 wheel drive fans in the Westcreek area. 37/97 was used for communications. The overdue parties extricated themselves.

As I recall, there were many more assists than those described above during the aforementioned snow storm and flooding which were not reported. Thanks to those who did their thing but please remember that the job is not done until the incident is reported. It will help make this column interesting and if the 37/97 machine is used, the information will be invaluable in justifying continued occupancy of the repeater site.

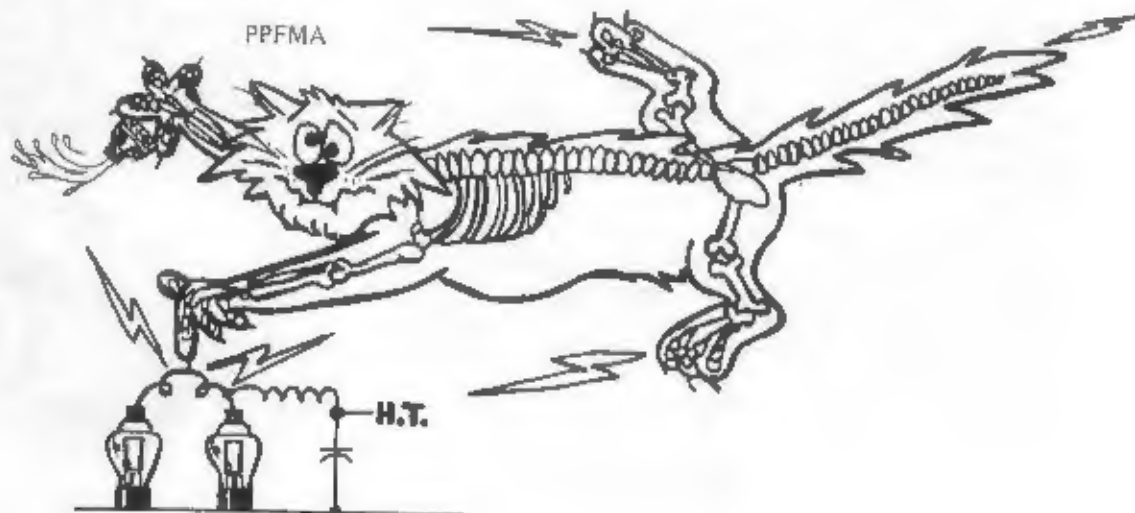
As everyone knows, at this time the 37/97 machine is in a malfunction mode and use is limited. Access to the site has been impossible due to heavy drifting snow on the mountain. Shifting drifts up to 20 feet deep have completely frustrated the road crew and Warren, W0YNE, the repeater site manager. As soon as Mother nature relaxes her wintery grip on the mountain, Warren plans to take a maintenance team to the site. Hopefully by the time this is published, 37/97 will again be back on full time.

73,
 W0MBZ

To: Zero Beat Editor

37/97 Interference. As you may have heard, the 37/97 repeater would begin to radiate noise and squeals every night about 5:30 p.m. Remote tests seem to indicate an over-heating condition. Shutting down the repeater for 5½ hrs. — i.e. 5:30 to 11 p.m. always cleared the problem. Once on site, we determined heating was not the problem. We then did a spectral search with no results. Over a cup of coffee, it was discovered a new Zenith color TV set was recently purchased. A quick check confirmed the TV set was the catalyst for the interference. It is mixing with the repeater transmit frequency resulting in a strong signal on the repeater input frequency. Two solutions are available — (1) Remove the TV, (2) eliminate the mixing medium, or (3) the proper approach and the one we shall pursue on subsequent trips to the repeater site is to locate and eliminate the mixing medium. In the interim, the repeater will be unlinked during periods of interference. We ask you for patience until we can resolve the problem.

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 Mix
 Juices!



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Dick Kohlhaas, W5UDM

BOARD MINUTES

The board meeting was called to order at the home of Dave Vierling, NØDV, 2511 N. Tejon at 7:30 P.M. on May 5, 1980.

Seven hams have volunteered for communications for the Black Forest Outhouse Race on May 10, 1980.

The meeting programs are set through the October meeting.

The need to find a new meeting place was expressed by Don Lohse, KBØKQ. Sabin Junior High will need to charge \$7.50 an hour for summer meetings. Frank Freiler, WBØPAJ, offered to check with Valley Hi as a possible meeting place.

The incorporation papers will be completed by Don Lohse, KBØKQ.

The Swap Fest was reported to be very successful and thanks were expressed to both members and non-members for their support.

Dave Vierling, NØDV, reported that things were progressing for Field Day, June 28 & 29. People to head CW, novice, phone, and VHF stations have volunteered. The board approved funds for the groceries for breakfast for the participants. The land use permit has been submitted to the U.S. Forest Service.

The board approved repaying Ray Uberecken, AAØL, for tubes he purchased for the club equipment. Also approved was payment to Don Lohse for materials for Ø Beat. It was also approved to join AMSAT and donate \$10.

Congratulations to the newest amateur radio club in the area The Mountain Amateur Radio Club in Woodland Park.

Hammy Award will be given to Dave Acree WØMBZ and Ken Holloway KAØDST for their hard work in giving us a very fine swap fest.

Those present at the meeting were Don, KBØKQ; Dave, WBØSDW; Dave, NØDV; Ray, AAØL; Lorna, WDØBTF; Dick, WBØPNX; Frank, WBØPAJ; and Charleen, WBØYOB.

The next board meeting will be June 2, 1980 at the home of Ray Uberecken, AAØL, 9635 Thoroughbred Lane, Black Forest at 6:30 P.M.

There being no further business the meeting was adjourned.

Respectfully submitted,
Charleen, WBØYOB

de the President

Well, we made it through the first half of 1980 with a minimum of problems, and lots of accomplishments. The Outhouse Race went off without a flaw, and the officials appreciated our help a great deal. Our annual public service rain-out, otherwise known as the Walk For Mankind, occupied many of us for a rather miserable, but rewarding Saturday morning. Our demonstration at the Mall of the Bluffs did not attract as many people as we expected, but the Mall itself was not very busy on those days.

So now it's June, and that usually means one thing — Field Day. Dave NØDV is hard at it, getting things ready for a super time. We hope to have the best turnout and effort ever. I believe the CW station has made the usual bet with the phone station, maybe this year we can give them a little run for it. (I don't mind any not getting any sleep — sounds like a good time). We will be able to provide breakfast on Sunday AM for the hard-core people, and that usually is a fine meal. I hope that some of the novices and technicians out there who have not gotten involved with our activities will take the opportunity of coming to Field Day, and to get some operating in while meeting some of the rest of the hams in the area.

On another subject, I hope you the members have been enjoying the programs on meeting night. It is important that we make the program part of the meeting as interesting as possible to as many of you as possible, and any suggestions you may have concerning program ideas would be appreciated. The recent appearance by Ehrhorn Technical Operations and the discussion on amplifiers was typical of what I would like to see. I hope you all enjoyed it as much as I did.

Hope all of you have a good summer, and don't go too far underground, we miss many of you. 73's.

Don KBØKQ

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Scopes continued from page 1

range of the vertical amplifier (the amplifier we put our signal into). The bandwidth stated is the -3dB (there's those dB's again) point of the amplifier which means the minimum frequency at which the displayed waveform is .707 of the true amplitude. This does not mean we cannot use the scope above that frequency and in fact many oscilloscopes can be used up to several times that frequency if we are not interested in the absolute amplitude or we have a means (signal generator) to recalibrate at the desired frequency. If enough amplitude is available, such as the output of a transmitter, connections can be made directly to the oscilloscope vertical deflection plates bypassing the amplifier. Using this technique, most low priced scopes can be used up into the VHF region.

Another important parameter of oscilloscopes is the vertical sensitivity or "how low can you go". This parameter is usually specified in volts per division or millivolts per division and is accurate up to about one half the specified bandwidth.

Some scopes have AC amplifiers. This means only AC levels can be viewed so there is also a lower bandwidth usually about 10 Hz. DC coupled scopes have provisions for AC coupling. AC coupling is normally adequate for RF work.

Most scopes have provisions for disabling the sweep circuits and feeding another external signal through the horizontal amplifiers. This mode is called X-Y and is the same as the X-Y coordinates of a graph. Lissajous patterns are generated by using this mode. Amplifier linearity checks can be made by connecting the oscilloscope Y input (vertical) to the amplifier input and the oscilloscope X input (horizontal) to the amplifier output. By driving the amplifier input with a sine wave and adjusting the oscilloscope gains a 45 degree line will be viewed. Any distortion in the amplifier will show up as a bend in the line. More on this later.

The uses for an oscilloscope around the hamshack are almost limitless. Over the next few months we'll look at a few applications.

Happy Viewing,
Ray, AA0L

PUEBLO HAM CLUB NEWS

K0PHF informs us that the PHC is in the planning stages of adding 4 more remote links into the main 19/79 machine. They are: 147.51 at Cripple Creek; 146.40 at Walsenburg; 146.43 at Trinidad; and 146.55 at La Junta. All the links will operate simplex, and we will try to keep up on these so we can tell you when they will go into operation.

Typesetting courtesy Letter Setters

MEETING NOTICE

The June meeting of the Pikes Peak Radio Amateur Association will be held at 7:30 p.m. on June 11, 1980 at Sabin Jr. High School. The program will be given by Bob Shriner WAOUZO, of Circuit Board Specialists. All members and other interested persons are invited to attend.

**FIRE UP
FOR
FIELD DAY!!**



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